

CLAIMS

1. An isolated DNA sequence capable of serving as a regulatory element in a chimeric gene which can be used for the transformation of plants and allowing the expression of the product of translation of the chimeric gene in particular in the regions of the plant undergoing rapid growth, characterized in that it comprises at least one intron such as the first intron (intron 1) of the noncoding 5' region of a plant histone gene.

2. DNA sequence according to claim 1, characterized in that histone intron 1 comes from a plant histone gene of the "H3.3-like" type.

3. DNA sequence according to either of claims 1 and 2, characterized in that histone intron 1 comes from a dicotyledonous plant.

4. DNA sequence according to claim 3, characterized in that histone intron 1 comes from Arabidopsis thaliana.

5. DNA sequence according to either of claims 1 and 2, characterized in that histone intron 1 comes from a monocotyledonous plant.

6. DNA sequence according to claim 5, characterized in that histone intron 1 comes from Zea mays.

7. DNA sequence according to any one of claims 1 to 6, characterized in that intron 1 is

oriented, in the direction of transcription of the chimeric gene, in a direct or reversed manner relative to its initial orientation in the direction of transcription of the gene from which it is derived.

5 8. DNA sequence according to any one of claims 1 to 7, characterized in that the regulatory element comprises two introns 1, identical or different, which are combined.

10 9. Chimeric gene for the transformation of plants comprising at least, in the direction of transcription, one regulatory element comprising a promoter sequence, a sequence of a herbicide tolerance gene and a regulatory element, characterized in that
15 intron 1 according to any one of claims 1 to 8.

 10. Chimeric gene according to claim 9, characterized in that the promoter sequence comes from a promoter of a plant histone gene.

20 11. Chimeric gene according to either of claims 9 and 10, characterized in that the promoter zone comes from the same plant histone gene as
 intron 1.

25 12. Chimeric gene according to any one of claims 9 to 11, characterized in that the promoter sequence comprises a promoter for a duplicated plant histone.

 13. Chimeric gene according to any one of claims 9 to 12, characterized in that the promoter

FOIA b 7 - DECLASSIFIED

sequence contains at least one promoter of a plant histone gene combined with a different promoter derived from a gene which can be naturally expressed in plants.

14. Chimeric gene according to one of claims 5 9 to 13, characterized in that the coding gene makes it possible to confer on plants an enhanced tolerance to a herbicide.

15. Chimeric gene according to claim 14, characterized in that the herbicide tolerance gene is 10 fused with a DNA sequence encoding a signal peptide allowing the accumulation of the product of translation of the herbicide tolerance gene in a subcellular compartment.

16. Chimeric gene according to claim 15, 15 characterized in that the signal peptide zone allows the accumulation of the product of translation of the herbicide tolerance gene in the plastid compartment.

17. Chimeric gene according to claim 16, characterized in that the signal peptide sequence 20 comprises, in the direction of transcription, at least one signal peptide sequence of a plant gene encoding a signal peptide directing transport of a polypeptide to a plastid, optionally a portion of the sequence of the mature N-terminal part of a plant gene produced when 25 the first signal peptide is cleaved by proteolytic enzymes, and then optionally a second signal peptide of a plant gene encoding a signal peptide directing

10023339-122101
TOP SECRET

transport of the polypeptide to a sub-compartment of the plastid.

18. Chimeric gene according to any one of claims 9 to 17, characterized in that the herbicide
5 tolerance gene encodes an enzyme which is active towards herbicides whose target is EPSPS.

19. Chimeric gene according to claim 18, characterized in that the herbicide tolerance gene encodes an enzyme which is active towards glyphosate.

10 20. Vector for the transformation of plants, characterized in that it comprises a chimeric gene according to any one of claims 9 to 19.

21. Strain of Agrobacterium sp., characterized in that it contains a vector according to
15 claim 20.

22. Transformed plant cell, characterized in that it contains a chimeric gene according to any one of claims 9 to 19.

23. Transformed plant or plant portion
20 obtained from a cell according to claim 22.

24. Process for the construction of a chimeric gene according to any one of claims 9 to 23, which comprises isolating an intron 1 from a plant histone gene as defined in any one of claims 1 to 8, a
25 promoter sequence, a signal peptide, and at least one transgene, and assembling them, in that order in the direction of transcription of the transgene.

10023379-132404
10023379-132404